**SECTION 3**
**DESIGN AND MISCELLANEOUS**

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</tr>
<tr>
<td>Municipal Streetlights, Pole Placement, Reference Only</td>
<td>3-20</td>
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</tbody>
</table>
I. Non-Municipal

A. Light Design

The following steps are necessary to complete a non-municipal light design. The order in which these are completed will vary.

1. Determine the mounting height requirements. For walk-ins (no bucket truck access) the maximum mounting height is 17 feet.

2. Identify the luminaire placement.

3. Municipal restrictions may apply.

4. Private security light poles and their point-of-delivery junction boxes are not to be installed within public utility easements.

5. Identify the electric service requirements and sources.

6. Check for voltage drop limitations using the Streetlight Voltage Drop Calculation Program spreadsheet: https://insrpteams/community/dc/standards/Pages/default.aspx
I. Non-Municipal Luminaire

A. Pole Placement

The Customer usually has a preference in pole locations. The following are restrictions.

1. Place the pole where it can be reached by SRP bucket trucks. The circumstances may not allow this, but it makes a major impact on the cost to maintain the luminaire. If such a location is not possible, the location shall be in an area where it is easily accessible by a ladder and the mounting height shall be 17 feet or less.

2. If the luminaire is mounted on a wood pole, the luminaire must be either accessible by a bucket truck or the mounting arm shall be 24 inches or less to allow maintenance from the pole.

3. Avoid placing the pole in watered areas to reduce corrosive damage to the pole. Use the concrete pedestal mounted poles in water retention areas.

4. Attempt to place the pole in an area away from vehicle traffic.

5. Do not place poles within locked areas.

6. Choose a site where it will be convenient to access underground or overhead service.

7. Bonding shall be provided between all above ground metallic power and communications apparatus (pedestals, terminals, apparatus cases, transformer cases, metal poles, etc.) that are separated by a distance of 6 feet or less. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.
I. Junction Box (J-Box) and Lighting

A. Circuit Requirements

1. The light pole j-box requirement is a result of SRP adopting an "all conduit" system in August 1992. At the time, the municipality agreement stated the streetlight electric point-of-delivery for new installations would be a flush-mounted j-box. Previously, the point-of-delivery was the handhole.

2. Light poles shall be served from a flush-mounted j-box or an above ground j-box, in which case the light may be served directly from said device. See the Construction Standards section for details. If the pole is six feet or less from any metallic apparatus, bonding is required. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.

3. See the Electric Service Specifications, Trenching and Conduit section, Customer Excavation Limits, for precautionary instructions concerning digging near SRP electrical facilities.
I. Non-Municipal Lighting

A. Special Municipal Restrictions

1. County – General

   By law a county in Arizona cannot own street lighting. If a development, with private streets, wants street lighting, the HOA can request non-municipal lighting from SRP and may negotiate with the county to pay SRP for the service. SRP will not light major public roadways.

2. Maricopa County

   All luminaires must be cutoff style with no more than 2% uplight. All SRP luminaires presently purchased conform to this standard.

3. Tempe

   a) Light poles shall not exceed 18 feet in height within 50 feet of any residential zoning district, 25 feet in height within 50 to 150 feet of any residential zoning district, and 30 feet in all other locations. Height shall be measured from the top of a light fixture to the adjacent grade at the base of the support for that light fixture.

   b) Floodlights are permitted only on industrial property.

   c) All exterior light shall be directed downward and away from adjoining property.

4. Phoenix

   a) Lighting should be shielded to prevent direct visibility of the source from adjacent property.

   b) Projected light level at the property line should be limited to one foot-candle or less.

   c) Luminaire mounting height shall be limited to 15 feet or less, within 150 feet of a residence.

   d) Luminaire mounting height shall be limited to 25 feet or less adjacent to nonresidential districts.
I. Illumination Levels

A. Options

If the Customer has requested an approximate foot-candle illumination level there are two options:

1. Use the photometric pattern for the type, wattage and pole height for the specific luminaire in the Customer Data section of this book. A clear plastic “overhead projector” copy of the chart can be overlaid on top of a scaled drawing of the Customer’s property. Wherever the patterns overlay for two luminaires the foot-candle values are additive.

2. Contact Policy, Procedures & Standards (PP&S).

PP&S will need:

a) A dimensioned drawing of the area to be illuminated
b) The foot-candles of illumination requested
c) Pole height
d) Number of poles
e) Luminaire style and wattage
I. **Voltage Drop Calculations**

A. **Streetlight Voltage Drop Calculation Program**

1. The maximum number of lights served from a single source shall be limited by voltage drop calculations. These calculations are performed using the Excel program “Streetlight Voltage Drop Calculation Program”. For assistance with this program, contact Policy, Procedures & Standards. You can access the program here: [http://insidesrp/elsyseng/electricsys/LineStd.html](http://insidesrp/elsyseng/electricsys/LineStd.html).

2. Before beginning data entry to the calculations program, read through the information on the tab marked “Instructions”. Next, go to the tab marked “Job Details” and fill in the information. Click either the “duplex” or “triplex” conductor and click the “Next” button to go to the tab for that conductor.

3. The Excel program is laid out as a series of ten j-boxes with branches off each j-box made up of ten J-boxes in a series. On overhead designs, the j-box represents the conductor connection at the pole. As data is entered, the program will send alerts that the design violates a limit if you exceed either minimum voltage for a luminaire or maximum current capacity for a conductor.

4. When all of the data is entered, click the “Go To Report” button and print out a paper copy.

5. The preferred service to a streetlight is directly from a single phase transformer via a flush-mounted j-box. (underground streetlight service shall be provided from an “all conduit”).

B. **Voltage requirements for SRP’s Luminaires**

1. SRP presently installs high pressure sodium style outdoor lighting. All high pressure sodium luminaires contain a ballast. The ballast is a coil of copper wire wrapped around an iron core, very similar to an electrical transformer. The function of the ballast is to control the electrical current supplied to the lamp. A ballast functions as long as it is provided the proper line voltage. All of SRP’s luminaires are rated for 120 volts nominal line voltage. This means they will function with an input line voltage of 120 volts, plus or minus some tolerance. These tolerances are listed below.

<table>
<thead>
<tr>
<th>Luminaire Wattage (all styles)</th>
<th>% Voltage Deviation from 120 V Tolerated</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>+/-5%</td>
</tr>
<tr>
<td>100</td>
<td>+/-5%</td>
</tr>
<tr>
<td>150</td>
<td>+/-5%</td>
</tr>
<tr>
<td>250</td>
<td>+/-10%</td>
</tr>
<tr>
<td>400</td>
<td>+/-10%</td>
</tr>
</tbody>
</table>

**NOTE:** The higher wattage luminaires allow for greater line voltage swings.
C. Light Emitting Diode (LED) Lighting

1. Presently SRP is not installing lighting using LED technology, however several Customers are beginning to install LED source lighting.

2. There are no LED luminaires in the drop-down selection boxes but the Customer’s lighting load can be modeled in the Streetlight Voltage Drop Calculation Program if the line Amps of the LED luminaire are known. Enter the service cable information and any HPS luminaires that may also be served at each j-box. Enter the load of the LED luminaires in Amps in the top entry box. The program will not automatically alert you when the voltage drop has exceeded the LED luminaire’s allowable limits, however the voltage drop in the second table to the right on the report page will appear. A typical LED luminaire will operate with as much as 25% voltage drop (down to 90 volts).

D. Remedies for Voltage or Current Violations

1. If a lighting circuit fails due to voltage drop or current overload, consider the following remedies.

   a) Possible solutions for a circuit design that violates the voltage drop requirements are:

      • Use 1/0 aluminum in place of #6 aluminum.
      • Add another circuit to reduce the total wattage of the luminaires served from the circuit.
      • Find a transformer closer to the luminaires to reduce the service length.

   b) Possible solutions for a circuit design that violates the current overload requirements of the conductor:

      • Use 1/0 aluminum in place of #6 aluminum.
      • Add another circuit to reduce the total wattage of the luminaires served from the circuit.
I. Electric Service Requirements and Sources

A. Additions to Existing Residential Areas

1. Light circuit voltage and thermal capacity, per the Streetlight Voltage Drop Calculation Program, shall be the limiting factors for long circuits, branched circuits and/or circuits with multiple luminaires.

2. Underground light circuits, which are to be installed in locations where a non-conduit distribution system already exists (one that uses secondary and buried J-boxes), should be fed from the existing secondary streetlight conductors (refer to the Construction Standards book, UWB8-UWB3). This will help to eliminate the necessity of trenching parallel to existing secondary streetlight conductors to obtain the feed from a pad-mounted transformer.

3. Light taps are not to be double lugged (more than one conductor per terminal hole) on mole assemblies.

4. Circumstances may require a transformer and associated equipment (tap enclosure) to be specifically dedicated for lighting (i.e., commercial or industrial parks) when single phase (1Ø) 120 V is not available.

5. Underground service shall be from a meter pedestal but cannot be tapped from a meter socket enclosure on a building.

6. Grounding is required for all steel poles and the luminaires on fiberglass poles.
   a) Steel Poles

   Steel light poles must be grounded. The ground connection can come from either the #6 Al triplex ground wire from the single phase transformer (some existing poles) or a ground rod in the j-box (see Construction Standards, J-box Connections).

   The connection to the pole is shown in the Construction Standards for Light Connections at Steel Pole Hand Hole.

   b) Fiberglass Poles

   The luminaire shall be grounded on all fiberglass poles. The ground connection can come from either the #6 Al triplex ground wire from the single-phase transformer (some existing poles) or a ground rod in the j-box (see Construction Standards, J-box Connections). A green #12 copper wire shall be run up the pole, from the pole handhole and connected to the luminaire grounding screw.

   The connection in the pole at the handhole is shown in the Construction Standards for Light Connections at Fiberglass Pole Hand Hole.

7. Bonding is required between all above ground metallic power and communication enclosures that are separated by a distance of six feet or less, in this case a steel light pole and any other above ground metallic power or communications enclosure. Bonding is an electrical connection designed to maintain a common electrical potential. See Construction Standards section.
SECTION 3: DESIGN AND MISCELLANEOUS

COMMERCIAL/INDUSTRIAL AND MAJOR ROAD STREET LIGHTING

STREET RIGHT-OF-WAY

LIGHT LOCATION

PER CITY

SRP STREET LIGHT WIRE

SRP DEDICATED POINT OF FEED T-BOX

UNLESS OTHERWISE NOTED BY DESIGNER

2'

CITY STREET LIGHT AND WIRE

J-BOX 5334692

P.O.D.

SRP WIRE AND CONNECTORS

FINAL GRADE

CITY LIGHT

2'

J-BOX 5034692

P.O.D.

SRP WIRE AND CONNECTORS

NOTES:

1. FOR CITY OWNED AND INSTALLED STREET LIGHTS TO BE SERVED BY SRP UNDERGROUND WIRE, THE POINT OF DELIVERY (P.O.D.) WILL BE AN SRP APPROVED JUNCTION BOX INSTALLED BY THE CITY. THE CITY IS TO PROVIDE THE LOCATION OF THE LIGHTS; HOWEVER, LIGHT POLES AND JUNCTION BOXES ARE NOT TO BE INSTALLED WITHIN PUBLIC RIGHT OF WAYS.

2. A 3 FT. PIGTAIL OF STREET LIGHT WIRE FROM THE CITY'S LIGHT POLE, VIA FLEXIBLE CONDUIT, IS TO BE INSERTED INTO THE JUNCTION BOX BY THE CITY. THE CITY MAY INCLUDE THEIR OWN IN-LINE FUSE IN THE JUNCTION BOX. SRP IS TO MAKE THE ELECTRICAL CONNECTION IN THE JUNCTION BOX (PHASE & NEUTRAL ONLY) (CHANDLER AND TEMPE HAVE AGREEMENTS TO CONNECT.)

3. THE CITY IS TO PROVIDE APPROPRIATE POLE GROUNDING IF METAL POLES ARE USED.

4. THE CITY MUST PROVIDE AND INSTALL AN SRP APPROVED JUNCTION BOX AS THE SRP DEDICATED POINT OF FEED. REFER TO THE ELECTRIC SERVICE STANDARDS FOR MINIMUM FAULT CURRENT DISTANCE REQUIREMENTS.
NOTES:

1. Base plate mounted lighting poles, on concrete pedestals, shall be utilized below the start-of-slope into a water retention basin.

2. Direct embed lighting poles may be used outside the start-of-slope into a water retention basin. The pole J-box must be set on the side of pole away from the water retention basin.

3. For areas of green-belt/multi-use having retention basins requiring lighting, developer to survey and stake high water mark. Lighting should be designed with consideration for the retention basins high water mark (i.e. pedestal lighting in retention areas).
NOTES:

1. IF THE POLE OR SONOTUBE MUST BE CLOSER TO THE CURB THAN 4 FEET, USE THE CONCRETE PEDESTAL MOUNTED POLE.

NOTES:

1. CUSTOMER TO STAKE LIGHT LOCATION PER APPROVED MUNICIPAL PLAN.

2. GRADE STAKE TO BE WITHIN 2 FEET OF J-BOX LOCATION. CUSTOMER TO STAKE J-BOX LOCATION. AVOID CONFLICT WITH SIDEWALK, LANDSCAPING, ETC.

3. GROUND ROD TO BE INSTALLED FOR EACH STREET LIGHT LOCATION PER STANDARDS ON PAGE 9-1-1.

4. SEE SONOTUBE INSTALLATION DETAIL, PAGE 9-1-1, IF APPLICABLE.

5. #6 BARE COPPER GROUND WIRE TO BE ATTACHED FROM GROUNDING LUG ON STREET LIGHT POLE TO GROUND ROD IN J-BOX.

6. J-BOX MAY BE POSITIONED BEHIND THE POLE, EXCEPT IN THE CITIES OF CHANDLER AND GILBERT.

7. IF POLE IS IN PROXIMITY OF METALLIC APPARATUS SEE CONSTRUCTION STANDARDS SECTION, LIGHT POLES IN PROXIMITY OF METALLIC APPARATUS, BONDING. ALSO SEE SECTION 3 "ELECTRIC SERVICE REQUIREMENTS NOTE 6".

8. FOR PEDESTAL MOUNTED POLES THE J-BOX IS LOCATED ABOVE THE WATER LINE. SEE POLE PLACEMENT, WATER RETENTION BASIN.

9. SOME CLEARANCE RESTRICTIONS APPLY TO J-BOX LOCATIONS NEAR TRANSFORMERS, SEE DESIGN AND MISCELLANEOUS, CLEAR AREA FOR CUSTOMER EQUIPMENT, ADJACENT TO TRANSFORMER.
NOTES

1. No Telco or CATV pedestals, water boxes, poles, permanent obstructions or tripping hazards between lines. Clear area is from PUE (house side) to street or 12' maximum in front of pad.

2. This 12" minimum dimension describes the space requirement between the SRP pad and the Telco or CATV pedestal. When stubbing up Telco or CATV conduit, allow additional space to ensure the Telco or CATV pedestal does not enter the 12" minimum space.

3. If a light pole or other utility is required in this area, it is preferred that it be installed a minimum of 18" from the property line.

4. Bonding shall be provided between all above ground metallic power and communications apparatus (pedestals, terminals, apparatus cases, transformer cases, metal poles, etc.) that are separated by a distance of 6' or less. See page 6-7-1 Light Poles In Proximity Of Metallic Apparatus, Bonding.
I. **Explanation of Graphic Symbols**

The graphic symbols and definitions in this document represent facilities used in the SRP distribution and subtransmission systems and appear on SRP Mapping and Job Design products.

A. Symbols

The symbols appear in two categories:

1. **Proposed** – indicates a facility that is to be constructed and installed. In most cases, the prefix "C-" is placed in front of the facility annotation.

   Example: Streetlight Luminaire and Mast Arm 158615 158616

2. **Existing** – indicates an existing facility. No prefix is used with the facility annotation.

   Example: Streetlight Luminaire and Mast Arm 158615 A158616

B. Removing, Transferring or Abandoning A Facility

Removing, transferring or abandoning a facility does not require additional symbols. However, the annotation and/or the existing symbol is modified as follows:

1. **Removal** – Parallel bars "//" are drawn over the Existing facility symbol and the prefix "R-" is placed in front of the facility annotation.

   Example: Streetlight Luminaire and Mast Arm

2. **Transfer** – The Existing facility symbol is not modified. The prefix "T-" is placed in front of the facility annotation.

   Example: Streetlight Luminaire and Mast Arm

Unless otherwise noted:

- Light number shall be annotated
- Symbol size = 11/32" 

To indicate Customer owned/SRP maintained equipment, a capital "F" shall be added to the end of equipment numbers on all maps, drawings and physical equipment in the field.

See the both the Underground Distribution Construction Standards and the Overhead Distribution Construction Standards for additional symbology.
I. **Underground Symbols**

A. **Junction Box (J-Box)**

An underground or above ground box that houses the connection point for underground secondary and service conductors.

<table>
<thead>
<tr>
<th>Equipment/Device</th>
<th>Proposed/Released</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junction Box</td>
<td>UVJB_UVTB_</td>
<td></td>
</tr>
<tr>
<td>Junction Box, Customer Owned</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Junction Box, Above Ground</td>
<td>UVP1 UVP1G</td>
<td></td>
</tr>
</tbody>
</table>

B. **Conduit**

A buried circular raceway (sleeve or duct) in which underground conductors are installed.

1. **Conduit Change**

A symbol used to mark the point in a conduit run where the number, size or encasement of the conduit change.

2. **Duct Bank**

A multiple conduit structure installed in a trench.

3. **Encased Duct Bank**

A duct bank encased in concrete.

4. **Casing**

A tubular steel pipe, installed with an auger bore, used to provide a tunnel under areas where a trench cannot be dug (such as canals and highways).

<table>
<thead>
<tr>
<th>Equipment/Device</th>
<th>Proposed/Released</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conduit Change</td>
<td></td>
<td></td>
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<tr>
<td>Non-encased to Encased</td>
<td>C-UK33 C-UK33E</td>
<td>UK33</td>
</tr>
<tr>
<td>Conduit Sleeve with</td>
<td>C-UK23</td>
<td>UK23</td>
</tr>
<tr>
<td>Electronic Markers</td>
<td>EM EM</td>
<td>EM EM</td>
</tr>
<tr>
<td>Service Conduit</td>
<td></td>
<td>USK25</td>
</tr>
<tr>
<td>Use compatible unit code</td>
<td>. . .</td>
<td>. . .</td>
</tr>
<tr>
<td>Service Conduit, Encased</td>
<td>C-USK25</td>
<td>USK25</td>
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<tr>
<td>No &quot;E&quot; used on compatible</td>
<td>. E .</td>
<td>. . .</td>
</tr>
<tr>
<td>unit service conduit code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Casing</td>
<td>C-UTH18</td>
<td>UTH18</td>
</tr>
<tr>
<td>Use compatible unit code</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I. Overhead Symbols

A. Conductor

1. Primary
   A wire used to carry electricity at voltages of 4.16 kV or 21.6 kV (feeder or lateral) for the distribution system.

2. Primary Feeder
   Primary wire that is 4/0 or larger.

3. Secondary
   A conductor intended to serve power from the low voltage side of the transformer to more than one point of delivery.

4. Streetlight
   A portion of conductor which runs from a distribution transformer, secondary device or secondary conductor to a point of delivery for street lights.

5. Private/Security
   A portion of conductor that runs from a distribution transformer, secondary device or secondary conductor to a point of delivery for private/security lights.

6. Service Conductor
   A portion of conductor installed from a distribution transformer, secondary device or secondary conductor to a single point of delivery (an electric meter or service entrance).

<table>
<thead>
<tr>
<th>Equipment/Device</th>
<th>Proposed</th>
<th>Existing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Streetlight/Private/Security</td>
<td>C-TX6P</td>
<td>TX6P</td>
</tr>
<tr>
<td>• Line weight and annotation same as for secondary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Service</td>
<td>C-STX40</td>
<td>STX40</td>
</tr>
<tr>
<td>• Line weight and annotation same as for secondary</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### SECTION 3: DESIGN AND MISCELLANEOUS

#### STREET LIGHT/PRIVATE/SECURITY LIGHT: (SRP OWNED & MAINTAINED)

<table>
<thead>
<tr>
<th>EQUIPMENT/DEVICE</th>
<th>PROPOSED/RELEASED</th>
<th>EXISTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Light Luminaire and Mast Arm *</td>
<td>N.A.</td>
<td>158616</td>
</tr>
<tr>
<td>Street Light Luminaire and Mast Arm on a Light Pole *</td>
<td>N.A.</td>
<td>158616</td>
</tr>
<tr>
<td>Two (2) Street Light Luminaires and Mast Arms on a Light Pole *</td>
<td>N.A.</td>
<td>158615 158616</td>
</tr>
<tr>
<td>Private/Security Luminaire and Mast Arm **</td>
<td>A158616</td>
<td>A158616</td>
</tr>
<tr>
<td>Two (2) Private/Security Lights on a Light Pole **</td>
<td>A158615</td>
<td>A158616</td>
</tr>
<tr>
<td>Two (2) Private/Security Lights on a Light Pole **</td>
<td>A158615 A158616</td>
<td>A158615 A158616</td>
</tr>
</tbody>
</table>

**CUSTOMER OWNED STREET LIGHT POLE:**

Street Light and Light Pole owned by an SRP Customer and maintained by Customer.

SRP Supplies Power only.

<table>
<thead>
<tr>
<th>EQUIPMENT/DEVICE</th>
<th>PROPOSED/RELEASED</th>
<th>EXISTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street Light, Power only “C-light” ***</td>
<td>C158616</td>
<td>C158616</td>
</tr>
<tr>
<td>Street Light, Power only Muni maintained ** (annotate muni)</td>
<td>ME158616</td>
<td>ME158616</td>
</tr>
<tr>
<td>Private/Security, Power only “C-light” **</td>
<td>C158616</td>
<td>C158616</td>
</tr>
</tbody>
</table>

**CUSTOMER OWNED PRIVATE/SECURITY LIGHT: FOR REFERENCE ONLY**

Private/Security Light owned by an SRP Customer and SRP maintains Bulb and Power only.

<table>
<thead>
<tr>
<th>EQUIPMENT/DEVICE</th>
<th>PROPOSED/RELEASED</th>
<th>EXISTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private/Security Luminaires and Mast Arm ** &quot;B-light&quot;</td>
<td>B158616</td>
<td>B158616</td>
</tr>
<tr>
<td>Private/Security Light on a Light Pole ** &quot;B-light&quot;</td>
<td>B158616</td>
<td>B158616</td>
</tr>
<tr>
<td>Two (2) Private/Security Lights on a Light Pole** &quot;B-light&quot;</td>
<td>B158615 B158616</td>
<td>B158615 B158616</td>
</tr>
</tbody>
</table>

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* SRP LIGHT NUMBER ANNOTATED.
* * SRP LIGHT NUMBER ANNOTATED WITH OWNERSHIP CODE. SEE "LIGHT POLE NUMBERING" IN CONSTRUCTION STANDARDS SECTION FOR A LIST OF OWNERSHIP CODES.
* ** OWNERSHIP CODE BASED ON THE LIGHT STYLE AS SHOWN ON APPROVED STREET LIGHT PLANS.
SECTION 3: DESIGN AND MISCELLANEOUS

DISTRIBUTION LINE DEVICE NUMBER (RISER, RECLOSER, SECTIONALIZER, CAPACITOR BANK, SINGLE BLADE DISCONNECTS, FRINGE AREA INTERCONNECTION FUSE OR GANG OPERATED SWITCH) 1X1.5" ADHESIVE BACKED ALPHA CHARACTERS AND 1-3/4" X 2-7/8" ADHESIVE BACKED NUMERIC CHARACTERS PLACED ON ALUMINUM SHEET (5035692)

NOTE: FOR POLE RISERS SEE UG12-7.7.

STREET LIGHT NUMBER-1X1.5"
CHARACTERS PLACED ON AN ADHESIVE BACKED 1-1/2" X 12" PLATE (5035685)
(DISTRIBUTION USE ONLY)

MILE POST COORDINATES 1"X1-1/2" ALPHA, 1-3/4"X2-7/8" NUMERIC PSL ON ALUMINUM PLATE (5035692)

TRANSMISSION STRUCTURE NUMBER 1-3/4"X2-7/8" NUMERIC PSL ON ALUMINUM PLATE (5035692).

TRANSMISSION SWITCH NUMBER. 1"X1-1/2" ALPHA, 1-3/4"X2-7-8" NUMERIC PSL ON ALUMINUM PLATE (5035692).

POLE INSPECTION TAGS - ALL POLES
(POLE INSPECTION CREW USE)

POLE TAG SHOWING SRP OWNERSHIP (5029151).
(TRANSMISSION USE ONLY)

NOTES:

1. ANY POLE LOCATED AT A MILE COORDINATE POINT IN AN AREA LACKING AN INTERSECTION OF BOTH MILE ROADS IS TO BE LABELED WITH THAT COORDINATE POINT. THE COORDINATE LABELING IS TO READ IN A HORIZONTAL DIRECTION ON THE POLE, WITH ONE DIRECTION COORDINATE IMMEDIATELY BELOW THE OTHER.

2. ANY POLE HAVING A STREETLIGHT, RECLOSER, CAPACITOR BANK, SET OF SINGLE BLADE DISCONNECTS, GANGED LOADBREAK SWITCH, OR POLE RISER IS TO BE LABELED WITH THE PROPER LINE DEVICE NUMBER. THIS NUMBER IS TO BE ATTACHED IN A VERTICAL DIRECTION READING TOP TO BOTTOM ON THE POLE.

3. POLES ARE TO HAVE MARKINGS INSTALLED ON THE MOST VISIBLE SIDE OF THE POLE; e.g; A POLE ON A NORTHEAST CORNER OF AN INTERSECTION SHOULD HAVE MARKINGS FACING WEST, OR SOUTH. THE MARKINGS SHALL NOT COVER THE POLE BRAND.

4. THE ALUMINUM SHEETS ARE ATTACHED TO THE WOOD POLES WITH SPECIAL SCREW NAILS ITEM # 5006221. THE 1 INCH ADHESIVE LABELS FOR STREETLIGHTS ARE APPLIED TO A 10 INCH PLASTIC PLATE WHICH IS THEN ATTACHED TO THE POLE WITH THE SPECIAL SCREW NAILS. ON STEEL POLES, IF PLATE THICKNESS IS 1/2" OR LESS THE SELF DRILL/SELF TAPPING SCREWS (5028982) MAY BE USED. IF PLATE THICKNESS IS GREATER THAN 1/2" DRILL 3/16" DIAMETER HOLE FOR SELF DRILL/SELF TAP SCREWS (5028982).

5. THE OWNER OF THE LIGHT SHALL PLACE STREET LIGHT NUMBERS AT 12' ON SHARED POLES (AS SHOWN ABOVE) AND 8' ON DEDICATED "STREET LIGHT" POLES.

6. PLACEMENT OF POLE MARKINGS SHALL BE IN ACCORDANCE WITH FIGURE 1. IF THRU-BOLTS OR OTHER SRP HARDWARE IMPede THE SPECIFIED LOCATION OF THE POLE MARKINGS. PLACEMENT OF POLE MARKINGS MAY BE ADJUSTED. EVERY EFFORT MUST BE MADE TO LOCATE THE MARKINGS AS CLOSE AS POSSIBLE TO THE INDICATED POSITIONS.

FIGURE 1

DISTRIBUTION LINE DEVICE NUMBER (RISER, RECLOSER, SECTIONALIZER, CAPACITOR BANK, SINGLE BLADE DISCONNECTS, FRINGE AREA INTERCONNECTION FUSE OR GANG OPERATED SWITCH) 1X1.5" ADHESIVE BACKED ALPHA CHARACTERS AND 1-3/4" X 2-7/8" ADHESIVE BACKED NUMERIC CHARACTERS PLACED ON ALUMINUM SHEET (5035692)
Mid-block spacing shall be between 350ft. to 425ft. with a maximum of 600ft.

The maximum may be reduced on curvilinear streets or on sections of streets where lights are not perpendicular to the street due to intersections.

Provide a streetlight at the end of the cul-de-sac when the distance into the cul-de-sac is 150ft. or greater.

Some dimensions shown may change per the Municipality.

Arterial, Collector or Residential Streets

Streetlight pole locations in Tempe shall be installed at arterial intersections as indicated in the drawings above.
POLE PLACEMENT

SPECIAL REQUIREMENTS - CITY OF SCOTTSDALE

Streetlight & Streetlight Stub-Out
Location When Sidewalks Are Installed

Streetlight & Streetlight Stub-Out
Location When Bike Paths Are Installed
Or No Sidewalks Are Planned

<table>
<thead>
<tr>
<th>R/W</th>
<th>STD.DETAIL</th>
<th>DIMENSION 'A'</th>
<th>DIMENSION 'B' *</th>
<th>EASEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>60'</td>
<td>66'</td>
<td>9.5'</td>
<td>5.5'</td>
<td>4.0'</td>
</tr>
<tr>
<td>80'</td>
<td>67'</td>
<td>16.0'</td>
<td>10.5'</td>
<td>-</td>
</tr>
<tr>
<td>80'</td>
<td>68'</td>
<td>5.5'</td>
<td>0.0'</td>
<td>10-0'</td>
</tr>
<tr>
<td>110'</td>
<td>69'</td>
<td>20.5'</td>
<td>14.0'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>70'</td>
<td>20.5'</td>
<td>14.0'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>71'</td>
<td>17.0'</td>
<td>10.5'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>72'</td>
<td>17.0'</td>
<td>11.5'</td>
<td>-</td>
</tr>
<tr>
<td>130'</td>
<td>73'</td>
<td>30.5'</td>
<td>28.0'</td>
<td>-</td>
</tr>
</tbody>
</table>

* Estimator must specify dimension on job order sketch.
POLE PLACEMENT

Exact Pole Placement

Once the layout and spacing are determined, the exact placement must be specified. Guidelines for placement of streetlight poles on the three categories of street are listed below.

MAJOR

Poles are to be placed back of the sidewalk where right-of-way is available. At street intersections place the pole at the break in the radius. Deviations from the break in the radius should not exceed 15'.

COLLECTOR

Poles are to be placed back of the sidewalk where it exists, or is planned. Where sidewalks do not exist and are not planned for, the poles are to be placed 2' behind the back of curb with 1'-6" being the minimum distance allowed from back of curb to pole.

LOCAL/MINOR

Poles should be placed at lot lines where possible. Spacing over 300' should only be used if absolutely necessary, such as in a subdivision with 175' frontage with poles on every other lot line.

Poles are to be placed back of sidewalk where the sidewalk exists or is planned. Where sidewalks do not exist and are not planned for, the poles are to be placed 2' behind the back of curb.

If the sidewalk is not poured against the back of curb, the streetlight poles should be placed midway between the sidewalk and back of curb, but not less than 1'-6" behind the curb; 2' is preferred.

If uniform spacing is not possible on a section of street between intersections, the slightly shorter spacing should be placed nearer the intersections rather than in the center of the block.

Wood poles shall be used to support luminaires on unimproved streets.

Steel poles shall be used to support luminaires on unimproved streets.

GENERAL NOTE:

Streetlight poles should not be installed at locations with a pad mounted transformer, switch, capacitor, fusing cubicles, etc. However, if a streetlight must be installed at the same location as pad mounted equipment or near the same location/lot line, the streetlight poles shall be located a minimum of 18" from either side of pad mounted equipment to allow for maintenance/operation as shown below. When a streetlight pole must be installed at the same location as a pad mounted transformer, the streetlight pole should be installed on the secondary side whenever possible. Bonding shall be provided between all above ground metallic power and communications apparatus (pedestals, terminals, apparatus cases, transformer cases, metal poles, etc.) that are separated by a distance of 6 feet or less. See Construction Standards section, Light Poles in Proximity of Metallic Apparatus, Bonding.

Outdoor Lighting Standards

SRP®

PROPRIETARY MATERIAL

DESIGN AND MISCELLANEOUS
MUNICIPAL STREETLIGHTS
POLE PLACEMENT

3-20-1

ISSUE DATE: 02/10/04
REV. DATE: 01/20/13
APPROVAL: W. LARAMIE
Proposed Sidewalk

Trench

9"  6"

Trench Detail where Street Light Conduit is in common trench with irrigation

Final Grade

Gutter line at street crossings

Proposed Street Light Pole

Conduit for Street Light 2/4 Min. Radius

Flush Mount Junction Box

Private Irrigation Pipe or Other Joint Facility

Irr Service Tap

Conduit for Street Light Conductor 2/4 Min. Radius

Flush Mount Junction Box

Trench Detail where Street Light Conductor is in trench by itself

8518E137.DGN
POLE PLACEMENT

NOTE
INSTALL CONDUIT UNDER EXISTING SIDEWALK BY TILTING TRENCHER STINGER ENOUGH TO END UP UNDER SIDEWALK.

TRENCH DETAIL WHERE EXISTING SIDEWALK IS TO REMAIN

TYPICAL DETAIL WHERE THERE IS AN ACCESS ROAD & MEDIAN WITH LIGHTING IN THE MEDIAN
THIS DETAIL TO BE USED WHERE INSIDE OF MEDIAN WILL BE USED AS A PLANTER

DESIGN AND MISCELLANEOUS MUNICIPAL STREETLIGHTS POLE PLACEMENT

ISSUE DATE: 07/10/85
REV. DATE: 01/13/15
APPROVAL: W. LARAMIE

66168131.DGN
POLE PLACEMENT

TYPICAL DETAIL WHERE THERE IS AN ACCESS ROAD & MEDIAN WITH LIGHTING IN THE MEDIAN

NOTE: CONDUIT TO BE INSTALLED BETWEEN POLE & JUNCTION BOX PRIOR TO CEMENT POUR (BY S.R.P.D.)

OUTDOOR LIGHTING STANDARDS

MUNICIPAL STREETLIGHTS

POLE PLACEMENT

ISSUE DATE: 01/24/00
REV. DATE: 01/28/13
APPROVAL: W. LARAMIE

3-20-4
8518E192.DGN